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ABSTRACT

This proceedings document focuses on research and program development in developmental education and instruction in mathematics, reading, and writing. Papers are: "Down in the Trenches: Tutors Learning about Learning" (Jace Condravy); "Expanding the Role of Developmental Education in Research Institutions" (Patricia Dwinell and others); "Restoration of Students in Academic Difficulty" (Armand Policicchio and Susan Parsons); "Skills Enhancement at the School-College Interface" (Willa Moore and others); "Types and Structures of Developmental Education Programming in Pennsylvania" (Carolyn Wilkie); "The Connection: Mathematics Teaching & Learning" (Bonnie MacLean Hodge and others); "Teaching Mathematics Study Skills" (Pansy Waycaster); "Interdisciplinary Models of Pairing at Three Institutions" (Jacqueline Simon and others); "Capitalizing on Workplace Literacy Instruction for Industrial Construction Workers: The ABC's of ABC" (Pam Wall and others); "Stimulating Curiosity: Cultural Literacy and Multiculturalism in Developmental Reading" (Meredith Gildrie); "Writing Assignments: The Right Tool for Improving Math Skills?" (Carol Bader and others); "The Writing Center and the Composition Classroom: Connecting Readers, Writers, and Text--Motivating and Improving Basic Writers through Reader-Response Activities" (Davie Davis); "Writing Portfolios for Teaching Self Evaluation in Basic Writing" (Caroline Stern); "No Handbooks: A Student-Based Approach to Grammar Instruction" (Alyse Jones and Lee Brewer Jones); and "Teaching Developmental Students: Creative Instructional Methods" (Russ Hodges and Mitchell Burchfield). (JDD)

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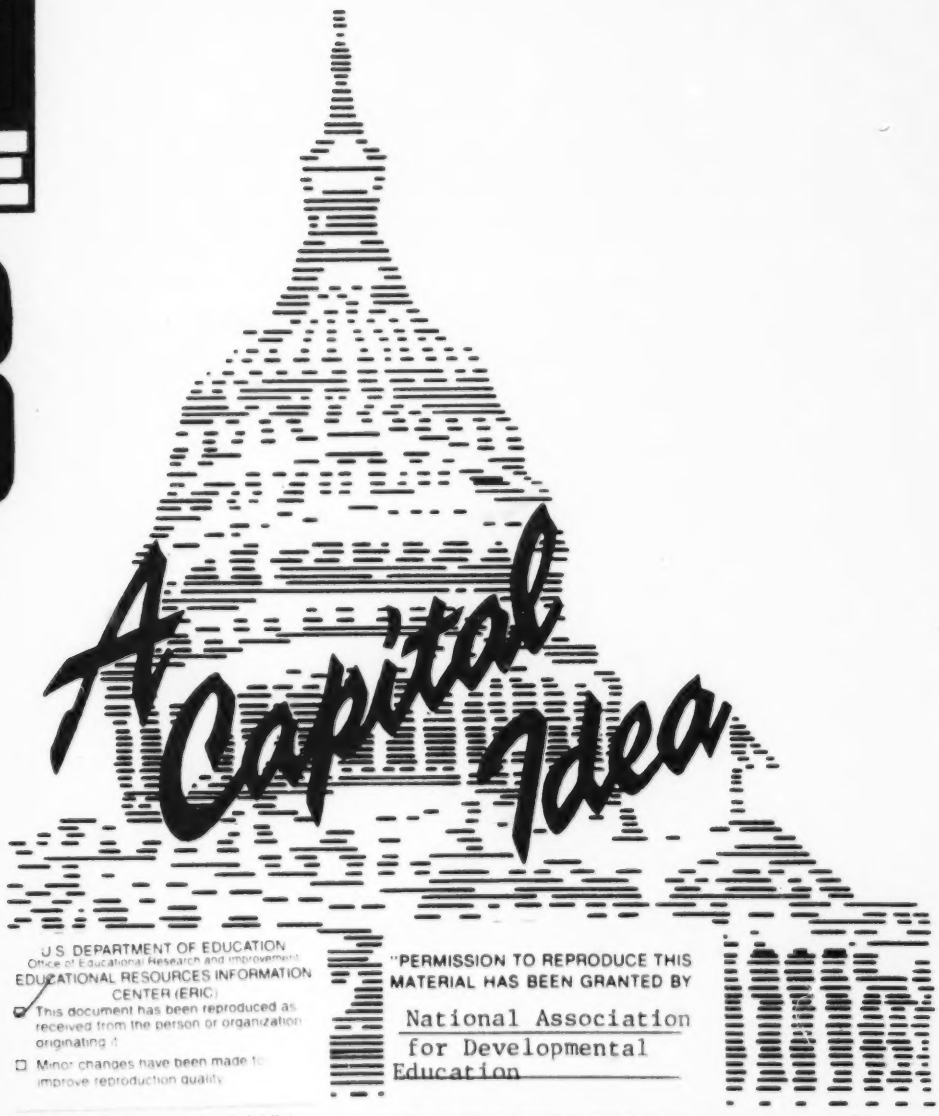

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Proceedings of the 17th Annual Conference

of the

National Association for Developmental Education

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March 17-21, 1993

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Research and Program Development

Down in the Trenches: Tutors Learning about Learning

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Peer tutors have benefited from the process of tutoring in numerous ways, primarily cognitive (Annis, 1983; Bargh & Schul, 1980; Benware & Deci, 1984), though also affective (Pierce, Stahlbrand, & Armstrong, 1983). This study explores the metacognitive learning that tutors acquire through their experience of engaging in the process of helping students to learn. Metacognitive learning may be defined as tutors' articulated thoughts and manipulation of thinking and learning activities in relationship to accomplishing their goals. Specifically, the study examines what one tutoring staff learned about the process of learning as they daily confronted students coming to them from a variety of courses, with myriad problems, both cognitive and affective.

In the spring 1991, a survey that included questions about tutor perceptions of the learning process (How would you define effective learning?) and strategies that they use to facilitate this process (What methods have been particularly effective in helping tutees learn and why?) was completed by 54 tutors—29 females and 25 males. Their experience as peer tutors ranged from at least one completed semester to two years. Approximately 20 percent were education majors. All of the tutors completing the survey had undergone a nine hour tutor training program, but had not received training in learning theory or styles within the context of that program.

How did this group of tutors respond to the question, "How would you define effective learning?" Their responses might most easily be chunked into two major categories: RETENTION and APPLICATION. The words retention, remembering, maintaining, and not forgetting were used in responses to this question sixteen times. Typical of these responses was: "Effective learning is when the person who receives the information can retain it and become the source of that same information."

Often the certainty that retention is a major component of effective learning was paired with the sense that true learning involves application, as one tutor concisely wrote, "Effective learning combines long-term retention of the material and the ability to apply concepts." The concept of effective learning as the "ability to apply" surfaced seventeen times. The tutors wrote about application as: 1) connection of material to previous knowledge; 2) ability to apply knowledge to future situations, practical problems, and life needs; and 3) understanding the relationship of knowledge to other content areas. Frequently these concepts were woven together as one wrote, "Effective learning is that which enriches the student's frame of reference for future learning experiences. This would include a body of knowledge, its relationship to other content areas, and its application to the student's needs in life. Effective learning includes the understanding of how knowledge is gained, metacognition, and self-activation."

Many tutors also defined effective learning as understanding, often distinguishing it from memorization as in "When the student really understands what is going on in accounting.... memorizing is not enough." Tutors also often linked understanding with retention or application. For instance, "Learning is not only remembering the new material, but it is also understanding it and being able to apply it to practical problems, which makes what you have just learned effective or useful."

The general consensus then of the tutors who completed the survey was that effective learning is primarily retention and application, which, according to Hartman (1990), who developed a model for "Characteristics of a Self-Directed Learner" are the outcomes of self-directed learning.

What strategies then did tutors identify that most effectively promote learning, or the ability to retain and apply? The adaptation of Hartman's (1990) model of self-directed learning presented below may help make some sense of the breadth of responses made to this question.

Characteristics Of Self-Directed Learner
Affective Factors

Affective Factors	Cognitive Factors	Metacognitive Factors
• self-motivates	• differentiates relevant from irrelevant info.	• plans work
• self-confident	• links old with new	• monitors eval./ comprehension
• values learning	• combines old with new into new whole	• uses feedback to improve performance
• feels control over educational destiny		• knows when, why, how to apply knowledge and skills
• regulates self-messages		
• persists self rewards		

Outcomes

- long-term retention of knowledge and skills
- applies knowledge and skills
  - —within subject, across time
  - —across subjects
  - —to everyday life
  - —to future goals

*Hartman's model did not reflect the category of cognitive factors in self-directed learning though she discussed them in the text of her article.

The methods that tutors identified as most effective in promoting learning generally reflect the model of self-directed learning described by Hartman (1990). For example, tutors referred to strategies that target the affective needs of the tutee. Reference to these methods surfaced fewer times—seven to be exact—than

those in the categories of cognitive and metacognitive factors.

A response which typifies the kinds of statements that tutors made regarding the affective needs of their students is, "The motivation aspect is the key. About 75% of the people I tutor are capable of passing the class and even getting an A, but all they need is motivation. The key think is to motivate them to do well, and once they do, it continues on. If they don't do well on their next test, then you have to keep at it."

Next in frequency were methods that could be characterized as efforts on the part of tutors to develop cognitive skills in their students. At least eighteen of their responses could be categorized as cognitive strategies. Methods aimed at connecting what is to be learned to something familiar for tutees accounted for over half of the strategies that they cited. Representative of these responses is the following thoughtful statement, "How the material applies to everyday life is particularly effective in my estimation because tutees [often] think the material does not involve what they need to know in the future. Once I show how they need it in their major and in their lives, the tutees seem more interested, more motivated to learn the material."

More of the tutors' responses to question four could be characterized as efforts to meet the metacognitive needs of their students rather than either of the other two categories, somewhat surprising in that Hartman (1990) observes that cognitive process are more commonly the target of instruction than are metacognitive processes. These were mentioned approximately twenty times. Tutors' responses revealed that they advise and help their tutees to plan their work. One tutor both recommended and provided a rationale for this method, "I recommend to students to begin studying ahead of time for tests. I think the students should study all along so they do not have to cram. Most students who do this seem to do better when they study this way. They find it easier to understand and comprehend the material. Also, if students have any problems or questions, they can discuss it with a professor before the day of the test, so they have time to understand the problem or concept."

Tutors also guide their tutees into monitoring and evaluating what they know and where their difficulties lie, primarily though asking questions or insisting that their tutees ask questions. For example, one tutor wrote, "Asking tutees questions is most effective, along with involving them with my plan for helping them and how they actively fit into that plan. I can't assume I know why they are having difficulty and I need specific information [in order] to help [them]. Usually they are tired and a little exasperated, so they have to be prodded before they tell me, and also before they realize for themselves where the problem stems from."

Building in ways to give tutees feedback to help improve their performance was the most frequently mentioned metacognitive strategy. One tutor reported that he makes his tutees develop practice tests because, [tutees] look at the material as if they were the teacher and can better predict what they should focus their studying on." And to help their students better comprehend material as well as how to use it, tutors encouraged their tutees to create mental pictures of the subject at hand. One tutor explained, "Illustrating is by far the best [method] for me. I teach a lot of science and it is much easier for tutees to learn by seeing a picture or process than it is to study a definition."

Again, the categories to organize tutors' responses are by no means discrete. Indeed they are related and interdependent, an understanding also revealed in the tutors' responses. One tutor noted, for instance, "The note card and visualization techniques have been particularly successful. These have educational value, but the primary utility is in removing fear of the course content by showing the student that it can be broken down into manageable categories and that it has meaning in the real world," a response which includes reference to the affective, cognitive, and metacognitive value of the method she cites.

So what conclusions can be drawn from these data? It may be safely concluded that this group of tutors possesses laudable insight into what effective learning is plus a store of strategies that would appear to be educationally sound and probably effective. If this group is representative of peer tutors generally—gender-balanced, with a range of tutoring experience, majors in a variety of areas, and academically successful (the group had an average GPA of 3.3)—then perhaps the study at best confirms that our staffs are doing the effective job that we have sensed that they are doing or, at least, relieves us if we haven't been completely sure what they were doing.

Of course, it's not clear if this group of tutors arrived at their jobs with their knowledge about learning and teaching already developed based on their reflection about their own success as students or if they developed their substantial insight through their tutoring experience, beginning with their tutor training and accumulating through a trial and error process with their tutees. Certainly, the same survey would need to be administered to a control group of non-tutors to answer that question with any certainty. But this researcher's inclination is that the students selected to work as tutors develop their keen understanding about learning and teaching through an examination of their own behavior, prompted by their new responsibilities as tutors, and their efforts to satisfy the needs of a diverse group of students.

Another conclusion that may be drawn from these data is that while these tutors for the most part define learning as professional educators would and employ methods that address the affective, cognitive, and metacognitive needs of students to promote self-di-

rected learning, they are more likely to address metacognitive and cognitive needs rather than the affective needs of their students. Or at least that's what they report—another aspect of this study that should be clarified; self-report does not always mirror practice, and an analysis of video or tape-recorded sessions to ascertain if indeed tutors were employing the methods that they identified is necessary to verify their self-report.

Nonetheless, while it is significant that the tutors in this study reported that they used metacognitive as well as cognitive strategies to facilitate learning, an unusual phenomenon according to Hartman (1990), there is concern about the short shrift given to affective needs. The researcher would have preferred to see a more balanced response that would include a greater number of methods directed at affective needs.

Sifting through this group of tutors' responses to these two questions and trying to relate them to a theoretical model begins to tell us about what our tutors are learning about the learning process. Further, there is value in the approach of practice-based theory, wherein we examine what is happening in tutoring programs at either the macro-qualitative level, such as this study represents, or at the microquantitative level in order to develop theory to guide the formulation or refinement of tutoring programs.

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Expanding the Role of Developmental Education in Research Institutions

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Researchers and educators are becoming more aware of the large numbers of underprepared students entering colleges and universities (Abraham, 1987 1988; Hardin, 1988; Higbee, Dwinell, McAdams, Goldberg Belle, & Tardola, 1989, 1991). Although the number of developmental programs is increasing, many students are not receiving the academic assistance they need to be successful in higher education (Astin, 1985; Kulik, Kulik, & Shwalb, 1983; Landward & Hepworth, 1984).

At this large, public research institution the relatively high rates of students failing core curriculum courses, of those on academic probation, and those academically dismissed indicate that a pervasive academic assistance program is warranted. University administrators, faculty from the Division of Developmental Studies, and faculty from colleges within the University have been working together since 1988 to develop a program that would continue to serve developmental students and also provide expanded academic assistance in the areas of mathematics, English, reading, study skills and counseling to students enrolled in the core curriculum.

In the summer of 1990 two courses were piloted for a group of more than 200 newly admitted high risk freshmen who were not required to enroll in traditional developmental education curriculum. University 102 (UNV 102) is designed to teach students how to study efficiently and effectively. Students learn how to become independent, self-directed learners. Monitoring and evaluating learning are taught as important aspects of the studying/learning process. Those taking this course apply strategies to textbooks and classes in which they are currently enrolled. Specifically, students learn how to (1) actively interact with texts; (2) engage in self-recitation; (3) take effective notes from lectures and incorporate concepts presented in texts and lectures; and (4) improve test taking behaviors. University 103 (UNV 103) is designed to provide students with a better understanding of their personal abilities, interests, and competencies and to ascertain how these aspects of one's self can enhance or hinder academic performance. Students learn how to utilize self-evaluation to understand their personal motivation level and unique manner of problem solving. Students also identify areas that adversely affect academic performance (e.g., test-taking anxiety, procrastination, math anxiety, time management problems, ineffective use of campus networking and develop effective plans to overcome such barriers to academic success. Both courses are now taught throughout the year, including evening sections, and are available to any student at the university, often enrolling more upperclassmen than freshmen.

Another service provided for the student body as a whole is the Academic Success Series of late afternoon workshops presented by Developmental Studies faculty on such topics as time management. overcoming procrastination, effective study strategies, managing academic stress, improving concentration, taking lecture notes, preparing for exams, learning styles, math anxiety, writing effective essay exams, whole brain learning, and managing test anxiety. Developmental Studies counseling faculty also see students on an individual basis and make presentations to classes upon request. Students with problems in the areas of writing, mathematics, and the social sciences are referred to the appropriate Developmental Studies learning laboratory. English faculty members offer workshops on various aspects of grammar and composition. The mathematics faculty provide weekly review sessions specifically for the first course in the institution's mathematics sequence. Students who decide to withdraw from college algebra are permitted to "change sections" to a non-credit developmental mathematics course.

The Division of Developmental Studies, soon to be renamed Academic Assistance, also houses the university's tutorial services, a peer tutoring program. Through its expansion of services, the university is able to assist any student in a momentary time of need, rather than just the small number specially admitted as developmental freshmen. Graduate students frequently attend the workshops on stress management; honors students enroll in UNV 103; faculty members make presentations at fraternities and sororities; the entire institution profits.

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Restoration of Students in Academic Difficulty

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Every year, students come to the university, full of hope and optimism. They're proud to be in college, and whether or not they were outstanding students in high school, most believe that they will succeed. Unfortunately, at the end of every semester, some of these same students are placed on academic probation or are suspended from the university. The effect of this academic status varies widely: some students chalk it up to the newness of college, "Well, I was just getting used to college; I didn't know what to expect." Other students blame their professors and class schedules, "How could I possibly do 'good,' my profs couldn't teach, and I had four super hard classes. It wasn't my fault!" Occasionally, students even genuinely see their own part in their academic struggle, "Boy, I really screwed up. What am I going to do? I need help!" No matter what these students say about their status, the bottom line is that they are in trouble academically.

So, what can be done to assist these students? This is the question we began asking ourselves more than three years ago. For the probationary student, our question was, "How can we keep them in school?", and for the student who returned after a period of suspension, "How can we help them to not make the same mistakes again?" Our program, Student Support Services (funded by a Federal Trio Grant), has been working with students in academic difficulty for twelve years. For nine of those years, we worked with underprepared incoming freshmen, meeting weekly to check their progress and providing them with information and assistance with study skills, academics, and general adjustment to college. Another grant program at the university also assists underprepared incoming freshmen. So, in 1990, we decided to change our direction and try our intervention strategies with the probation and undeclared readmit population. These students are not remedial students and were admitted to the university with average or above average academic potential.

Each semester we take approximately 50 new students into our "restoration program." These students must meet certain criteria set up by the federal grant (Students must be either first generation college students, or be from a low-income family or be physically disabled or learning disabled. At this university, 70% of all undergraduates meet at least one of these criteria.). If a student is found eligible (probationary students are asked to apply to the program; undeclared readmits and undeclared probationary students are required to apply), we can begin working with them.

The content of our program is fairly simple. We have a group seminar that meets weekly, and we meet the students on an individual basis each week. In both the individual meetings and the seminar, a variety of study skill topics are discussed. Usually, in the seminar, the topic is covered in a general way and then tailored to the students' needs in the individual meeting.

All students must sign a contract agreeing to accept responsibility for their education by working with their program advisors to make appropriate changes in their behaviors and work to improve their academic performance. The program does not "coddle" program participants but seeks to "teach" them how to be successful and effective students. The students must choose to adopt these characteristics and strategies. We want the students to undertake these challenges and responsibilities, but with the knowledge that we will provide needed guidance, encouragement, and support.

We are not using any brand-new, never before used, strategies. What seems to make the program work, according to the students, is not the originality of our study skill methods, but it is the individual attention and the opportunity to spend time talking and thinking about how to really get what they want and need out of their college experience.

An evaluation of the program reveals the value of the program. We examined four types of data as part of our evaluation process: 1) GPA data; 2) retention rates; 3) comparison data of program and non-program students, and 4) the students' evaluation of the program.

The following chart illustrates how both the average cumulative and average semester GPA's have changed while students participated in the program:

GPA After Each Semester

	Entering	1st	2nd	3rd	4th	5th
Cumulative	1.737	2.011	2.358	2.484	2.422	2.49
Semester		2.250	2.553	2.607	2.536	2.794

The goal of the program is to retain and graduate 50% of the students who enter the program. Students will only be active participants in the program for up to three semesters. The following chart illustrates the retention averages for new program students who entered during the semesters 1-91 through 9-92.

Retention Average After Each Program Semester

After 1 Semester	After 2 Semesters	After 3 Semesters	After 4 Semesters
68%	55%	52%	50%

The retention rate for *all* program students averages 78% to 85% per semester. Fifty-two students received academic suspensions, and 13 students of the 52 have since been readmitted to school, for a net loss of 39

students. Twenty-seven students not on academic probation either withdrew or transferred to other institutions. Five students have graduated. This does not provide enough data to analyze. One hundred sixty-six students were counted in this retention data. Two groups of program students were compared with two groups of non-program students who had similar academic histories and family income levels. Both compared cumulative GPA and retention.

Program Semesters:	1st	2nd	3rd
Program Students			
N 21	Retention - 67%	61%	48%
Enter GPA	2.057 cum GPA	2.181	2.21
1.928	2.134 sem GPA	2.614	2.567
Non-Program Student			
N 16	Retention - 63%	44%	38%
Enter GPA	1.803 cum GPA	2.007	2.312
1.841	1.669 sem GPA	1.851	2.271
2nd Study Program Students			
N 28	Retention - 57%	47%	
Enter GPA	1.859 cum GPA	2.267	
1.753	2.071 sem GPA	2.547	
Non-Program Student			
N 20	Retention - 45%	20%	
Enter GPA	1.535 cum GPA	1.919	
1.431	1.792 sem GPA	2.032	

An analysis of this data shows some differences between both groups when examining retention data. There is less of a difference with GPA although Group 2-non-program students' GPA is quite a bit less than the program students. More analysis needs to be done with GPA data in order to reach any firm conclusions.

The fourth area for evaluation is the students' evaluation of the program. Students are asked to complete a detailed evaluation of the program, which includes both the seminar (group work) and the individual work with their program advisor. The instrument consisted of items on a five part scale and a series of opened ended questions.

Eighty-four percent of the students responses rated the seminar very good or excellent and 90% of the student responses rated their individual program advisor as very good or excellent. The answers to the open ended questions were highly supportive of the other data collected about the program.

Data collected to evaluate the program indicate that the intervention may have helped students raise their GPA's. This is especially evident when their semester GPA's, after entering the program, are compared to their GPA's prior to entering the program. The retention percentage is comparable to that of the general student body and markedly higher than the non-program students in the comparison study. Student evaluation of the program indicates a high degree of satisfaction on the part of the participants. All of this may indicate that the program is succeeding, yet more study over a longer period of time and comparison with similar national data are needed.

Skills Enhancement At The School - College Interface

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In 1985 one of the authors formulated an environmental model that would constitute a university-wide, coordinated effort at filling gaps in knowledge. These efforts resulted in a paper that describes a broad outline of this approach (Moore, 1985). This model assumed that we all have gaps in knowledge and that many of us fill those gaps through the process of secondary learning. We define secondary learning as that learning which occurs beyond one's primary learning objective. For example, if a student goes to France to study molecular biology, and while in the environment, he learns to speak French, we refer to biology study as primary learning and to French mastery as secondary learning.

The model assumes that significant numbers of students come to college with cultural and educational underpreparedness. These shortcomings include underpreparation in information, thought processes, and general social skills. To address these shortcomings, we proposed a structured academic environment which would simultaneously meet student needs and would exert a pervasive effect on student development. We also maintained that the new environment, if properly implemented, would have a positive, non-interfering influence on the student's primary curricular pursuits. For example, a biology major's curriculum would be enhanced rather than diluted by a structured environment.

In that paper we also noted that reinforcement and cross-discipline cooperation were essential if a structured environment was to have any chance of markedly altering a student's behavior within a four-year period. There were, however, some skeptics who maintained that higher education is resistant to change and that some of our proposed practices would challenge traditional academic freedom. Because of the comprehensive nature of the immersion model, it was also viewed as an ambitious project that might experience some success in a very small self-contained environment, but would be difficult to implement in a medium or large university. We remained determined to demonstrate its validity and proceeded to implement several components at Southern University.

In this paper we describe some of the activities which are in various stages of implementation. We also discuss the implications of these activities on student retention as well as on the quality of our graduates. Further, we provide data on successes experienced in specialized programs and we offer suggestions on how the immersion model might work in precollege environments.

The Pre-college Component

When we conducted public seminars of the immersion model in the fall of 1991, participants in the audience suggested that many of the components of the Skills Enhancement Booklet were items that could be implemented in grades 9 -12. In fact, it was noted that these grades represent points in which many of the gaps in knowledge occur. We accepted this suggestion and immediately explored the possibility of implementing a pilot program at the Southern University Laboratory School. The Laboratory School offered an excellent setting for testing the pilot because of proximity, small size, and its formal affiliation with the university. To pursue this initiative we obtained a special research grant from the Chancellor's office which enabled us to implement the pilot project in the Spring of 1992. The project covered grades 9-12 and involved approximately 100 students and 18 faculty members, as well as many of the parents of the participating students..

After we had provided appropriate orientation for all parties and had given the faculty the assurance of its involvement in every facet of the program, we proceeded to outline and implement some necessary procedures for program documentation. The following key elements were considered critical: 1. Pre-tests were administered to the students by the Laboratory School faculty. 2. Each teacher was instructed to keep a Skills Enhancement Journal. 3. Post - tests were scheduled to be administered at intermittent periods. 4. The project director was expected to keep detailed records of all visits to the Skills Resource Laboratory. 5. Changes in student behavior were to be captured on videotape. 6. An evaluation design was established so that correlation would be made between student performance on the American College Test (ACT) and the Graduate Record Examination with the level of participation in the program. 7. A design was established to correlate the level of parental involvement with student success.

Although this project has been active less than eighteen months, we have observed several indicators that suggest that we are headed in the right direction. During the summer of 1992 the Chancellor's grant provided stipends for faculty to develop course materials to be used in the Laboratory School project. This curriculum development project was very successful and was critical in giving the faculty a sense of ownership for many of the materials they would subsequently use in their respective classes. During the summer, we also conducted a special immersion activity in which eight Laboratory School students engaged in structured skills enhancement activities four days each week, principally through the use of computers. Much of their work focused on general knowledge, the ACT examination,

and selected items from the Skills Enhancement Booklet.

Although we had not obtained ACT scores or post-test results at the time this paper was presented at the NADE conference, there were several indicators that this project is on a solid foundation. Parental involvement was high and an examination of the video tapes showed student growth over a two-month period. The Laboratory School students also participated in a summer quiz bowl competition with twelve other pre-college programs sponsored by the University. Some of these programs consisted of some of the top students from throughout the State of Louisiana. Despite these odds, the Skills Enhancement students (a nonselective sample from one school) advanced to the semifinals in this high level competition. We believe that this speaks to the quality of their summer experience and that it will be reinforced by post-test scores and ACT results.

The second phase of the precollege project involved Northdale Magnet Academy, an alternative school in which very high risk students are enrolled. Despite the odds against these students completing high school, the Academy has achieved an exemplary record. Because of its uniqueness and strong track record, we invited Northdale Magnet to participate in this project as the second pre-college entity. The officials and faculty of Northdale agreed to do so and we initiated a program in August of 1992. We used the same basic approach that was employed at the Laboratory School. One modification was made so that faculty would be involved in the initial development of curriculum materials. This project provides an excellent medium for determining how two different learning environments can enhance the skills of students with different cultural and educational backgrounds.

Discussion

In this presentation we have described several components of a model for enhancing the skills of undergraduates and high school students. We maintain that it is particularly applicable to students who very often are deprived of academic and cultural exposure through no fault of their own. We make the argument that gaps in knowledge can be filled through secondary learning in much the same way a person learns a foreign language. The model requires that we establish an environment in which faculty members are committed to cooperation and reinforcement and in which students cannot escape the effects of this immersion. The model assumes that all persons possess gaps in knowledge and that some of us are able to fill those gaps through our routine daily experiences, requiring no extensive remediation.

This means that one would not have to abandon being a chemist to improve one's vocabulary, computer literacy, or foreign language facility. It means however that if an aspiring chemist has a desire to become proficient in a foreign language it would be desirable to study chemistry in a foreign language environment. Using the same line of reasoning, it means that if computer science students desire to improve their English writing proficiency, they should study computer science in a "writing environment." The point is that primary and secondary learning can coexist in the appropriate learning environment. On the other hand the absence of a well structured environment would solidify the failure of the program described in this paper,

The Southern University model is ambitious because it breaks with the traditional practice of faculty members doing their own thing in the name of academic freedom. The immersion model does not assume that all students have the same intelligence potential, nor does it guarantee success for all students enrolled in college. It makes a strong case for the theory that intelligence can be taught (Whimbey & Whimbey, 1975). The Grambling Teacher Education thrust (Mills, Dauzat & Joiner, 1989) and the Xavier University Soar program (Carmichael & Sevenair, 1991) are both examples of what can be achieved on a smaller scale. The Southern University plan attempts to permeate the entire undergraduate environment.

Since we first introduced the immersion concept in 1985, we have added several components to the program. The most notable additions are the video initiative designed to enable students to borrow skills enhancement videotapes for use at home and a growing use of faculty-prepared multimedia courseware. Many of the new components reflect changing trends in society and the need for the academic curriculum to respond to those trends.

Despite the increased quality and availability of commercial videotape programs, we remain committed to having our faculty prepare some tapes on test-taking skills, world events, and topics of cultural relevance. This enables the faculty build on student strengths and to address student needs that cannot be anticipated by commercial manufacturers. The accessibility of videotape players makes it convenient to literally extend the university beyond its traditional physical boundaries and provide learning opportunities for larger numbers of students. Further, videotapes provide opportunities for repetition and reinforcement, two indispensable ingredients in the immersion model.

The precollege component enabled the university to extend the model to an environment in which many of the deficits could be offset before college. It also provided a learning environment that could be managed somewhat more efficiently than a large open university environment. But the most attractive feature of the precollege component was the prospect for parental involvement. In that regard, a long-term study of the educational achievement of Vietnamese refugees has been conducted at the University of Michigan (Caplan, Choy, & Whitmore, 1992). One of the more significant outcomes of that study was the profound effect that parental

influence and family structure had on the success of these students. The Southern University study is examining the effects of various forms of parental influence on student achievement through its laboratory school component and its collaboration with Northdale Magnet Academy.

While much of the skills enhancement model has been tailored for Southern University, it is adaptable to any institution where large numbers of students might possess correctable gaps in knowledge. The open admissions university must be able to create a balance between its traditional policy of opportunity for everyone and society's demand that it provide well educated graduates. The model we have presented represents one approach to achieving that balance. Change is essential. Maintaining the status quo will diminish the value of open admissions institutions as important educational resources. To true believers in educational opportunity, the time for producing thoughtful and productive change is rapidly running out.

Acknowledgments

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Types and Structures of Developmental Education Programming in Pennsylvania

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In 1992, NADE's state affiliate in Pennsylvania, PADE, sponsored a statewide survey of developmental education programming to ascertain the nature and extent to which remedial and developmental (R & D) services are provided in Pennsylvania. The 100-item questionnaire was sent to all of Pennsylvania's 189 institutions awarding undergraduate degrees and certifications. Eighty (42.3%) of the institutions responded by the deadline.

An article summarizing the results by institution type was published in PADE's newsletter, *The PADE Informer*, in Spring, 1992. The present paper will overview the overall results and draw comparisons, where applicable, with two recent national studies — *College-Level Remedial Education in the Fall of 1989* (National Center for Education Statistics, May 1991) and *National Study of Developmental Education: Students, Programs and Institutions of Higher Education* (Boylan, Bonham, & Claxton, 1992, November).

HOW IS "DEVELOPMENTAL EDUCATION" DEFINED IN PENNSYLVANIA? A follow-up survey completed by 42 Pennsylvania institutions showed that the predominant operational definition of "developmental education," is "education to remediate deficiencies . . ." More holistic, developmental definitions are also in effect, however.

WHAT R & D PROGRAMMING IS OFFERED IN PENNSYLVANIA? The majority of responding institutions offer assistance in the skills areas of writing, math, reading, and study skills. Less frequent is assistance with science. In addition to these skill-oriented R & D services, other common programming includes:

- **Freshman seminar classes**, offered in 57% of the responding schools .
- **Summer or pre-college programs**, offered in 62% of the schools but are required only of some students.
- **Special advising/counseling services**, available at 79% of the schools, and required of students in 57% of the schools where they are available. (It is important to note that the Boylan, Bonham, & Claxton (1992) study found that special advising/ counseling services were correlated positively with student success, and that 71% of the schools offered this service. The NCES (1991) study reported that 82% of institutions offer this service. Pennsylvania's rate of 79% compares favorably with these figures.)
- **Placement testing**, required of all first-year students in 78% of the responding Pennsylvania institutions. (The Boylan et al. (1992) study indicates that mandatory assessment correlates positively with student success. In the NCES (1991) study , 76% of the schools provided this service. Pennsylvania's rate is consistent with this national average.)
- **Campus-wide tutoring programs**, offered at 87% of the Pennsylvania institutions that responded to the survey. (The Boylan et al. (1992) study also found that tutoring programs, with tutor training, was a component related positively to student success. The PADE survey didn't include any questions about the training of tutors — just the existence of a campus-wide tutoring program. The NCES (1991) survey shows that 85% of the schools provided peer tutoring services as of 1989.)

What are the primary instructional formats by which R & D services are offered in Pennsylvania institutions? Study skills assistance is usually offered via graduating credit courses and non-credit group instruction. For reading, the most common format is the institutional-credit course, but graduating credit courses and individualized tutorials are common formats. For writing and math, the most predominant format is the institutional-credit course. When assistance is offered for science, the most common format is the individualized tutorial. In comparison with the NCES (1991) study, Pennsylvania offers developmental education instruction via courses more commonly than schools nationally do.

What kind of credit, if any, is awarded for participation in these services? The answer depends on the content area. Instruction is offered via courses more characteristically in Pennsylvania than is true nationally (NCES, 1991), but it seems as though students nationally are receiving institutional credit for R & D instruction to a much greater extent than students in Pennsylvania do. In turn, Pennsylvania schools award no credit to a much greater extent than do schools nationally. The national data below are drawn from the NCES (1991) study:

Reading: 21% of the Pennsylvania schools award no credit; nationally, the rate is 12%. In Pennsylvania, 36% of the schools award institutional credit; nationally, it's 66%. In Pennsylvania, 25% of the schools award degree credit; nationally, it's 21%. (In Pennsylvania, 18% of the schools offer no courses in R & D reading.)

Writing, 21% of the Pennsylvania schools award no credit for developmental/ remedial instruction; nation-

ally, the rate is 10%. In Pennsylvania, 52% of the schools award institutional credit; nationally, it's 67%. In Pennsylvania, 28% of the schools award degree credit; nationally, it's 23%.

Mathematics, 26% of Pennsylvania's schools award no credit; nationally, it's 11%. In Pennsylvania, 49% of the schools award institutional credit; nationally, it's 69%. In Pennsylvania, 25% of the schools award degree credit; nationally, it's 20%.

Freshman seminar classes typically carry graduating credit rather than institutional credit or no credit in Pennsylvania, but this service is not addressed in the NCES study.

Summer or pre-college components typically carry either institutional credit or no credit rather than carrying degree credit in Pennsylvania; again, this service is not addressed in the NCES study.

WHO PARTICIPATES IN R & D PROGRAMMING? In Pennsylvania, the target groups are fairly equally divided among the general student body, Act 101/EOP students, and other special admissions students. LD and ESL students are also targeted for assistance.

What are the most common referral sources? In rank-order, in Pennsylvania they are the admissions process; college counselors/advisors; instructional faculty; self-referrals; and, the placement testing process.

What portion of the freshman class participates in R & D services? Again, there are differences by content area. In Pennsylvania, the programming area with the highest participation rate is writing. In rank-order, the next highest participation rates are for math, and then for reading and study skills. Many schools do not separate their reading and study skills services, so that may account for the comparatively lower rankings of these two service units.

In a general way, we can compare these figures with those from the NCES (1991) survey, where a slightly different trend was shown: 21% of the freshmen nationally participate in developmental/remedial services for math; 16% for writing, and 13% for reading.

WHAT IS THE ADMINISTRATIVE STRUCTURE FOR R & D SERVICES? In Pennsylvania, 64% of developmental education programming is offered through a decentralized structure, although the Boylan et al. (1992) research indicates that a centralized structure is associated with student success. Within Pennsylvania, a centralized structure is more typical in 2-Year than in 4-year schools (46% vs. 27%).

The PADE survey also shows that most developmental education programming is offered through Academic Affairs (64%). In Pennsylvania and nationally (NCES, 1991), developmental education services are offered somewhat more commonly through traditional academic departments than through other units such as learning centers, tutorial centers, and counseling centers. In about 20% of Pennsylvania's schools, the services are offered by both traditional academic departments and separate service units. By content area, the results are as follows:

- Reading services in Pennsylvania are offered through traditional academic departments in 44% of the schools; nationally, it's 51%.
- Writing services in Pennsylvania are offered through traditional academic departments in 60% of the schools; nationally, it's 65%.
- Math services are offered through traditional academic departments in 61% of the schools; nationally, it's 69%.

IS EVALUATION SYSTEMATIC? The Boylan et al. (1992) study showed that systematic, on-going program evaluation correlates positively with student success. According to that survey, only 20% of the schools regularly conducted evaluation of their developmental education programs, although a higher percentage evaluates their courses regularly. The NCES (1991) study indicated that "almost all" schools conduct evaluations of their developmental education programming. This study shows that these evaluations commonly judge program effectiveness on 4 to 5 factors, including student evaluations, faculty evaluations, course completion rates, grades in follow-up courses, and other follow-up variables. The PADE survey shows that most (89%) responding schools conduct evaluations of their individual developmental education services on a regular basis.

In Pennsylvania, program effectiveness is typically based on multiple factors, as it is nationally. In 59% of Pennsylvania's schools, program effectiveness is based on 2-4 factors, and in 34% of the schools, it is based on 4 or more factors. Some of these factors include student retention and/or graduation, gain scores, student usage, grades, achieving objectives, student satisfaction, and portfolios or other innovative measures.

WHAT CONCLUSIONS CAN BE DRAWN ABOUT R & D PROGRAMMING IN PENNSYLVANIA? Because of the relatively low response rate (42%), we are able to draw only tentative conclusions about the nature and extent of R & D programming in Pennsylvania. With that caveat in mind, our data show the following trends:

1) The majority of Pennsylvania's post secondary degree-granting institutions offer R & D programming consisting of both academic services and special advising/counseling services. Within the major emphases areas (study skills, reading, math, writing), services are typically offered on group bases.

2) The most common primary operational definition of developmental education programming in Pennsylvania is a remedial one; however, developmental definitions are also common.

3) The types of developmental education programming provided in Pennsylvania mirror national trends; however, there are a couple areas of difference. First, Pennsylvania's schools favor a decentralized rather than a centralized structure. Second, in Pennsylvania there is a greater tendency to award "no credit" for R & D services than there is nationally.

4) The primary developmental education programming services offered in Pennsylvania reflect some of the "best practices" elucidated in the Boylan et al. (1992) project, including providing special advising/counseling programs, mandatory placement testing, and program evaluation. The PADE survey was not designed to assess the extent to which Pennsylvania's schools include the other "best practices" identified in this study.

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Mathematics, Reading and Writing

The Connection: Mathematics Teaching & Learning

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Current trends in mathematics education maintain that students can no longer be passive observers of mathematics but must become active participants. The focus is clearly towards both the instructor and the student having accountability for the dynamic processes of the classroom. Developing mathematical power for all students implies the creation of an environment that often differs from that which is currently practiced in the traditional mathematics classroom (NCTM, 1991, p. 1). Mathematics instructors must put the power of learning into students' hands. The study skills component of developmental studies works regularly with students to identify specific tools for learning that achieve this goal. This presentation focused on how to connect teaching and learning in mathematics by using the following four tools often identified in a traditional study skills class: notetaking, the use of notecards, collaborative learning activities, and reading the mathematics textbook. We implement these strategies in our mathematics classes by the techniques described below.

Notetaking is the first study skills strategy that we present to our students. We recommend a modified version of the Cornell Method. The student draws a vertical line separating the paper into two columns. The left column is used for the words associated with mathematics - the definitions, procedures, and reminders of previously learned skills. The right column is used for specific classroom examples. We give class notes in this format and find that students adapt to it easily. When students review notes, we suggest that they recite all procedures found in the left column. They are then encouraged to turn to the right column of their notes to study specific examples. In addition, enough room is available for students to personalize their notes.

Notecards effectively link textbook reading, classroom notes, and practice problems. We suggest two kinds of notecards - the procedure card and the problem card. On the front of the procedure card, students are encouraged to write the steps of a given mathematical procedure. On the back of that card, students write an example that illustrates the procedure. A complete solution is written along with step-by-step explanations if needed. On the front of the problem card, students write the directions and the problem. They also note the section number and/or page number. On the back of that card, a complete solution is written. Initially students are told the problems to put on problem cards. As the course progresses, students choose their own sample problems. When reviewing for tests, students are instructed to shuffle their cards and practice problems in a random order. This better prepares them for the test and decreases the chances for "blank out." The extra time spent throughout the semester doing notecards is well invested; at the end of the semester, students have their own personalized study guide for the final exam. Notecards are a requirement in our classes. We recommend that students use a 4 X 6 card.

Collaborative learning activities encourage students to be active participants in the classroom. Students interact with each other and the instructor by brainstorming problem solving approaches and verbalizing solutions. Communication among students emphasizes to the student the precise nature of the language of mathematics. The following activities work successfully. Calculator group activities motivate students through technology. These activities also promote interesting discussions about various calculators and illustrate the necessity of mathematical precision by the operator. The problem presentation activity requires students to divide into groups to solve a problem that involves a newly learned procedure. The spokesperson for each group is responsible for presenting the problem and the group is required to help answer questions that may result. Even incorrect solutions generate positive class discussions. The activity of sharing practice problems is done at the beginning of class. This encourages students to compare solutions and to help each other. The group quiz activity requires students to discuss a problem and reach a consensus for the solution. Each group turns in one completed quiz. The students receive a grade based on that quiz.

Reading the textbook is the weakest study skill. Students must be specifically shown effective reading techniques that are appropriate to mathematics. We begin by defining the three common reading rates in mathematics. The first rate is skimming which focuses on the section's title and other bold faced headings. We recommend that students use this rate when prereading a section before the instructor teaches it and before a test. It is used to get the overall idea of a section. The second rate is rapid where students read the text of a section - paying close attention to definitions in bold print, procedure boxes, and other information that is set off or highlighted in the text. This rate is used in prereading as well as during review. It is perfect for getting a more detailed picture of information that has been skimmed. The third rate is careful. At this rate, the student is reading with paper and pencil handy. Students work through each example continuously checking their work with that presented in the text. This type of reading is done after the lecture on a section, but BEFORE the student attempts practice problems. The purpose is to clarify details.

Reading is cyclic in that students are always reading at one of the prescribed rates. We find that students preread when told when and how. Again, the instructor must be very specific about what is to be read and the rate that is appropriate. When SPECIFIC instructions are given, we find that students follow those directions precisely. Oftentimes students are told which definitions and/or procedures they are to put in their notes before the next class meeting. Having students preread sections and begin their notes before a class is a springboard for discussions about mathematics rather than lectures. A lack of interaction often occurs in a mathematics class because the student feels he/she is unable to contribute. Prereading is the strategy used to prove to students that class is more meaningful when background knowledge is in place before class. Students tend to take better lecture notes, feel more confident and at ease, as well as interact with the instructor and fellow classmates.

These strategies are adaptable to an individual's personal learning needs and style as well as the instructors teaching methods. Each of the above studies skills strategies is an effective tool for learning. However, when used together they create an atmosphere of control for the student. Students express strong feelings of being in control of their learning. They feel less "teacher" driven, more personally motivated, and in charge of their mathematics education. These strategies must be slowly implemented into the classroom. It takes time for the student to effectively incorporate these strategies and it takes time for the instructor to adapt the study skill into the mathematics content.

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Teaching Mathematics Study Skills

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Study skills courses are bountiful on most college campuses and are highly recommended to incoming freshmen students. Although excellent topics are covered in a regular study skills course, two weaknesses are evident: (1) little or no material is presented on how to adapt these study techniques for more technical courses like mathematics and science; and (2) often no content is covered in the course on which to practice the study skills being learned.

Background

Reading and studying a mathematics textbook is different from reading and studying an English novel or history textbook. For example, a student may be assigned 125 pages of a history text to read and summarize; whereas, the same student may be assigned 4-5 pages in a mathematics text to read and to elaborate on details of several examples and/or proofs. Thus, the student is using totally opposite tactics (condensing versus expanding) in the two reading assignments and needs different study techniques for each approach. Efforts to find a suitable study skills textbook which could be adapted for a mathematics course or a mathematics textbook which included an adequate coverage of study skills, have been unsuccessful. Thus, Spring, 1992 the decision was made to develop appropriate materials for a Mathematics Study Skills course and pilot the course Fall semester, 1991.

Course Details

As an alternative to creating a new course, a special section of the regular Study Skills course was specifically designed as a Math Study Skills section. Nineteen students enrolled in the Math Study Skills course. Although it was expected that these students would also enroll in a regular mathematics course, only six of them actually did. Materials for the course were written during the summer of 1991. Packets for students were prepared for each of the topics to be covered in the Math Study Skills course. Topics covered included:

- Why do we need a Math Study Skills course?
- Attitude toward mathematics class
- How to prepare for the first day of class
- What to do during class
- How to study and learn mathematics
- How to prepare for a mathematics test
- How to take a mathematics test
- How to choose and use a calculator

Once these topics were covered, five sessions on mathematics content were taught. Fractions was the content are chosen for these five sessions. Specific topics discussed included:

- An introduction to fractions
- Comparing and reducing fractions
- Adding and subtracting fractions
- Multiplying and dividing fractions
- Word problems

Manipulatives were incorporated into the instruction of all five sessions. In fact, the first assignment was to construct—using pencil, paper and scissors—an individual set of fraction bars to use during the remaining sessions. This idea originated with a presentation by a colleague, Virginia Hamilton, at the 1991 NADE Conference in Nashville, Tennessee. This session dealt in part with a Creative Publications project entitled, "The Fraction Factory." The expectation was that through individual construction and regular use of the fraction bars, students would gain a more concrete understanding of fractions and operations with fractions.

Results

The grade distribution for the Math Study Skills course follows:

A	—	3
B	—	5
C	—	7
D	—	1
F	—	2
W	—	1

This 80% success rate is comparable with the success rate for regular study skills courses. But the important question is "How did these students perform in concurrent or subsequent mathematics courses?" Six of the original 19 students enrolled in a developmental mathematics course and the Math Study Skills course during the same semester — Fall 1991. Of these six students, three passed the mathematics course with a letter grade of C or better, and three withdrew from the mathematics course. Thus there was a 50% success rate. During Spring 1992, thirteen of the sixteen students who passed the Math Study Skills course enrolled in a mathematics course. Of these, four students passed, one student failed, and eight withdrew. This 30% success rate was much lower than that of students taking a mathematics course concurrently with the Math Study Skills course. These success rates make one point very clear! Study skills must be taught *simultaneously* with mathematics content for maximum learning to be achieved.

Implications

Although this pilot study yielded no clear solutions to the question of how to teach study skills for mathematics, several research needs were made apparent. First, and foremost, more research is needed in the area of study skills for mathematics. The question is not: "Should we teach mathematics study skills?" but, rather, "*How* can we *best* teach mathematics study skills?" Should study skills be taught as a separate course, concurrent with a mathematics course, incorporated into existing mathematics courses, or is there another, even better format?

A few notes are in order regarding this research question. First, if mathematics study skills are taught as a separate course, study skills teachers and mathematics content teachers must collaborate and coordinate efforts in the same fashion reading and study skills teachers often operate. In this manner, the study skills and mathematics content become more integrated. Second, mathematics study skills, as a core of information, must be given serious treatment, else students will not view these skills as important to the learning of mathematics. Specifically, tests must incorporated items dealing with mathematics study skills and graded projects and/or group work with study skills must be an integral part of the course.

A third inference drawn from this study is that mathematics study skills should be introduced to students as early as possible in their college career. this means that mathematics study skills should be offered prior to any mathematics course or concurrently with the students' first mathematics course (development or college level). Students need to develop good mathematics study habits early in their mathematics work in college for optimal levels of success.

A final implication of this study is a challenge to authors and publishers of mathematics textbooks. Serious attention should be given to incorporating study skills into developmental (and perhaps other mathematics) textbooks. One page of study tips, as some texts have included, is not an adequate response to this need. Textbooks must begin to weave study skills into the presentation of new concepts and procedures. As of Spring 1992, only one developmental textbook —*Understanding Elementary Algebra* by Goodman and Hirsch, published by West Publishing company— had study skills incorporated throughout the first five chapters. Although this is not an endorsement of the textbook, we at SVCC have adopted it for our Beginning Algebra course for Fall 1993. In addition Goodman and Hirsch now have written the sequel —*Understand Intermediate Algebra*— also with study skills incorporated. We have adopted this text for our Intermediate Algebra course for Fall, 1993. To my knowledge, there is no basic mathematics (arithmetic) text at this time which provides an adequate treatment of study skills.

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Interdisciplinary Models of Pairing at Three Institutions

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One goal of college reading and study strategy instruction is to help students become more successful in their content courses (Nist & Simpson 1989). Study strategies can be more effectively taught through direct application to the subject to be learned than through teaching these same strategies in isolation (Sheets & Rings 1989). Thus, developmental courses paired with difficult content courses teach directly the study strategies and writing necessary to succeed in that course.

Educators from three private four year institutions presented models to teach reading and study strategy courses paired with demanding content courses. Only in the fellow student model does the instructor of the reading class attend the content class and take notes as a student. The reading instructor also completes many of the assignments and takes the tests along with the students. The shared text model focuses on using the content text in the reading class and applying study strategies directly to the course that is paired. The enrichment model includes reading materials and writing activities that supplement the content class and also provides study strategies that can be applied to a content course taught by a variety of instructors.

The fellow student model at Widener University was based on earlier successful paired classes (Simon & Noble, work in progress) at Brandywine College. In the fall of 1992, Business Management freshmen recommended to take a required reading course (two credits for graduation) were also enrolled in two sections of a new course in economics (3 credits for graduation) offered by one instructor. The reading instructor attended most classes and shared notes and textbook annotations with fellow students. At the end of the semester, grades for both reading deficient students and other freshmen in the economics course who were not judged to be reading deficient were similar. Students in the paired courses also rated the methodology as very helpful and suggested that paired instruction continue. These same students made as much reading progress as those who followed a traditional reading curriculum in a different required reading class.

The fellow student model for paired reading at Fairleigh Dickinson University has been in existence for three years. In the fall of 1992, students enrolled in a required 75 minute reading class (0 credits for graduation) and were also enrolled in an American political government course (3 credits for graduation). The reading instructor attended all of the content classes and the students practiced study strategies with the content textbook and class notes. In the reading class, the students learned how to write essay questions and practiced writing essays weekly with their notes or textbooks. The two instructors met after class and discussed student and academic needs. The reading instructor then addressed these concerns in the 75 minute weekly reading class. The students showed great improvement from their first test to their final grade and 87.5% also passed the reading comprehension test. A majority of students felt that the reading course helped them take better lecture notes, keep up with assignments and prepare for tests earlier.

The shared text model was attempted at Rider College during the summer of 1992 with students enrolled in a study strategy course (0 credits for graduation) and an introductory sociology course (3 credits for graduation) in a probationary summer program. Prior to the summer semester, the study strategy instructor spoke to the content instructor about the expectations for the course and was given the syllabus, text, and assignments. The students practiced study strategies with their sociology text and also worked in a separate study strategy textbook. In their evaluation, the students noted that the study strategy class was worthwhile and reported that the notetaking system was most helpful. Study strategies found most useful were previewing and annotating texts. The students rated the need for regular review sessions as important. The study strategies instructor found this paired course to be an improvement over the previous summer program that was not paired in part because the students could answer practice questions from their professor and could form study groups since they had the same content instructor and course. The content instructor also reinforced the study strategies in class.

The enrichment model was also developed at Rider College during fall and spring semesters in 1991-1992. Students selected the reading and study skills course (3 credits for graduation) and were also enrolled in world history (3 credits for graduation). Due to difficulty in registration, students were in different sections with more than three content instructors. Therefore, the enrichment model focused on selected readings from a history anthology and novels (recommended by the history staff) that matched the same time period that students were studying in their history classes. Students wrote self assessment journals for study strategies used in history classes and book reviews, summaries and study guides related to the readings. Since the students had a variety of textbooks and tests, some study strategies transferred, but not as readily as hoped. Communi-

cation between the reading instructor and the other history instructors occurred but not on a regular basis. Students in their evaluation stated that they felt positive about paired classes because they had become better readers and writers and felt paired reading and study strategy class had helped them. They recommended the pairing of content courses to other students though their grades did not reflect a positive change in their history tests.

Due to the variety of experiences, the presenters suggest the following in planning a paired course:

1. Investigate the needs of your college. Select content courses that have been historically difficult for freshmen.
2. Pair with "good teachers" who are interested in helping students learn to succeed. These content instructors should be open to having you visit their classes and share their syllabus, assignments, and tests.
3. Start small. Model one pairing after examining many variables (types of pairing, placement, credit, grading, and goals).
4. Plan on meeting with paired instructors and visiting classes, exchanging materials, discussing issues, needs and concerns before expected pairing.
5. Work with the registrar, deans and advisors well in advance of the course to control cross registration. Required placement seems to work best.
6. The reading and study strategies instructor needs to be genuinely interested in the paired concept because it takes more time and energy to design and complete successfully. This is due to the need to communicate with content instructors and to adapt the instruction of reading and study strategies to the content course.

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Capitalizing on Workplace Literacy Instruction for Industrial Construction Workers: The ABC's of ABC

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The ABC's of Construction Project, funded by a U. S. Department of Education workplace literacy grant, began operating the Technical Development Center (TDC) at the local Associated Builders and Contractors, Inc., training center in August 1991 as a joint venture of the local school board's Adult and Continuing Education Department and the city Chamber of Commerce. The project's purpose is to upgrade basic skills among employees of more than 200 industrial construction companies in the local petrochemical industry by offering instruction in the context of trade areas as identified through a literacy task analysis of first-year course materials. This project targets up to 150 members from three worker groups: students in the four-year journeyman trade courses (pipefitting, electrical and instrumentation, and millwright) who demonstrate gaps in basic skills; workers whose literacy skills prevent them from entering a training course; and entry-level employees who have little experience in the industrial construction workplace. The TDC offers workers opportunities to upgrade reading, writing, math, and employability skills. Instruction is offered on an individualized open-entry, open-exit basis in the late afternoons and evenings, immediately after the normal construction workday ends. As a result, this projects meets the needs of workers who cannot read or write as well as those who need review in algebra or trigonometry. Unlike traditional workplace literacy programs which operate at the jobsite, the TDC operates in a vocational training setting.

Workplace literacy instruction is actually a variation of traditional developmental education programs. Just as many entry-level post-secondary students lack the skills required for success in the class, many entry-level employees lack the skills required for success on the job. Or, in some instances, the literacy demands of a specific job have developed beyond the expertise of the workers who have been employed in such positions for several years. Just as many developmental education programs apply basic skills instruction to content-based materials, the curriculum developed for the TDC applies learning strategies to the content of the industrial trades. Whereas developmental education emphasizes "learning to learn" and traditional workplace education focuses on "learning to do," TDC instruction helps workers "learn to learn to do" by conducting a literacy task analysis to identify learning needs, designing competency-based instruction, and using a variety of indicators to evaluate results.

Literacy Task Analysis

The task analysis forms the basis for curriculum development and instruction. Its purpose is to identify the content, strategies, and thinking required for success on the job and, for this project, in the classroom For example, in the ABC project, analyses of the print materials that workers used in the training program revealed a wide variation of reading levels (from eighth grade to professional) and text demands (e.g., exposure to 644 diagrams in the electrical and engineering first year program to 144 diagrams in the pipefitting program). Table 1 identifies the steps for completing a task analysis.

Table 1 Literacy Task Analysis

1. Visit the job site to observe the work environment. Interview the senior engineer, supervisors, human resource personal, and the plant manager to determine which literacy requirements are needed for job success. Ask them to identify which "soft skills" (e.g., communication, interpersonal skills, work habits) influence job stability and promotions. Ask if there are any new technologies, regulations, operations on the horizon which will affect future literacy requirements. Collect written materials that workers use on the job.
2. Visit the training center. Interview instructors to determine what literacy requirements are required for success in the class. Ask them to provide names of successful craft training students in more advanced classes. Interview those students to determine which competencies contribute to their job and class successes.
3. Attend and observe classes in the training program to discover the following: What type of instruction is used? What kinds of materials (texts, tests, calculators, etc.) do students use? What kinds of questions do students ask? What kinds of questions do instructors ask? How do students interact in terms of verbal and body language? What kinds of mistakes do students make? What do students identify as problem areas? What do students believe they need to learn in order to experience success on the job?
4. Collect all written materials and analyze in terms of readability, reading, and math tasks.
5. Using the results of the interviews and analysis of materials, develop a list of competencies most frequently needed for success.

6. Design curriculum. What do you need to teach? How can you teach it in ways which simulates the job and training program?
7. Survey existing job-related basic skills materials for adults, if any. Look for materials which focus on relevant content areas (e.g., math for pipefitters) rather than more generic topics.
8. Create customized curriculum which utilizes the materials you collected from the jobsite or classroom as the basis for the development of basic skills.
9. Provide staff development to help teachers incorporate job-specific examples into learning. Emphasize the transfer and interrelationship of learning in the classroom to the skills needed on the job.
10. Evaluate, with emphasis on performance-based indicators.

Competency-Based Instruction

The results of the literacy task analysis formed the basis of competency-based instruction (basic skills instruction for doing). Methods and criteria for determining learner achievement were stated explicitly and a variety of alternative and individual modes for attaining achievement were made available to workers.

In addition, competency-based instruction in the ABC workplace literacy program utilizes functionally-contextual curriculum. This means that instruction occurs in the context of job-related tasks or content and emphasizes the process of learning rather than the content of the material. Functionally-contextual materials allow workers to apply what they know to the process of learning.

Materials designed for this project incorporate the kinds of thinking workers need and the kinds of materials they read in their training courses. The materials developed use a realistic example drawn from the workplace as a metaphor for the strategy under discussion. For example, reading blueprints on the job introduces the concept of diagrams in a text. Once workers understand the relevance of the strategy to the work world, the strategy is explicitly described using a direct instruction approach. Guided practice is used to model the strategy and apply it to text. Exercises on the strategy ask the student to (1) identify how they think through a process, (2) provide a response to a question, (3) identify how the response was obtained, and (4) apply the thinking process to other situations. For example, in learning how to read a chart, workers need to identify the title, labels, kinds of information found in rows and columns, and, in some cases, special words, symbols, and abbreviations. Once a response is given, workers describe where they found the information on the chart. Finally, to apply their understanding, workers may be asked to restructure a given chart or create a new one.

Evaluation

As of November 1991, all newly admitted students to the ABC training program were screened using the TABE (Test of Adult Basic Education) to identify those who need counseling and basic skills enhancement at the TDC. Other students are self-referred or referred by their craft training instructors.

A competency pretest and posttest of literacy skills were developed for each of the four-year journeyman trade courses (pipefitting, electrical and instrumentation, and millwright) targeted by this project. The results of the TABE and the pretest were used to develop an individual learning plan for each student. Students were retested at regular intervals (30, 50, 80, 100 hours of instruction) to evaluate progress.

A variety of other indicators were also used to assess student and program success. These include interviews with students, teachers, and craft instructors; classroom inventories; grades and retention in craft training courses; completion of apprenticeships; anecdotal reports; changes in work habits, productivity, or attitudes; and enhanced self-concept.

The program was identified as a exemplary project by the U. S.. Department of Education and refunded for a second cycle in 1992. More importantly, after only a few months of operation, the industries involved were convinced of the value of the project and the Technical Development Center has become an institutionally-funded part of the ABC Training Program.

Stimulating Curiosity: Cultural Literacy and Multiculturalism in Developmental Reading

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As the debate continues over the relative importance of cultural literacy and multiculturalism, a case can be made that these concepts should interact in developmental reading courses. Literature, be it fiction or nonfiction, popular or academic, is replete with references to additional information a reader must have in order to understand fully the material at hand (Hirsch, 1987). Because developmental readers often do not have a broad base of knowledge, their understanding of what they read can be adversely affected (Langer, 1984; Baldwin, Peleg-Bruckner, & McClintock, 1985). People do not generally like to admit their weaknesses, so readers often cope with a lack of knowledge by ignoring unfamiliar references. This practice can weaken a reader's curiosity and lead to bored readers or nonreaders. Lack of interest is often cited as a reason for poor comprehension (Baldwin, et al., 1985) and not reading at all. To reinvigorate reader curiosity and to stimulate increased reading and learning, students must be led to broaden their interests.

Current research suggests that ethnic pride can be used to stimulate reading (Pearson, 1992). Students have a natural interest in understanding their own background. As students delve deeper into their own heritage and discover they can cope with unfamiliar references there, broader interests can develop. Confirmation of the value of group identity, various approaches to learning, and contributions of various groups to our world can help establish the confidence readers need to persist in the development and use of reading skills (Schear, 1992; Pearson, 1992).

Exercises utilizing cartoon analysis and "cloze" readings can help students see unfamiliar references and unexplored topics as interesting challenges rather than roadblocks to learning. By discussing with students references they do know, the instructor helps students see how references, be they cultural, scientific, historical, or of any other area of knowledge, enhances a reader's understanding of written material. African-American students might share knowledge about Malcolm X to clarify a reference in a cartoon. Veterans might explain a reference to General MacArthur. Mexican-American students might explain the relevance of Cinco de Mayo in a Taco Bell commercial. Students readily see how important their knowledge of Dumbo is to a 1988 The Far Side cartoon which pictures him as a rogue elephant attacking an airplane. The pride that comes from knowing helps motivate students to gain more knowledge (Lowery & Young, 1992).

The introduction and exploration of unfamiliar references needs to follow. (See Appendix A for a copy of a transparency used in class as a basis for modeling and discussion.) Students that are well versed in the use of context clues to divine the meanings of unfamiliar words quickly see "clues" to references in reading passages. If a classroom contains a variety of types of students ones different by race or age or life experiences, lively conversations develop. New respect for others or new self-respect is gained as information and perspectives are shared and appreciated. As the instructor models methods of dealing with unfamiliar references and group discussion allows practice of these methods, students can gain confidence in their ability to cope with new information (Schear, 1992). The importance of interaction with the text—first to understand the author's ideas, but also to establish or conceptualize one's own understandings or beliefs in response to the text and to explore the variety of other possible responses to the text—should be emphasized in these discussions (Chase & Read, 1987). Assignments which send students out to do their own reading, to research, and to participate in knowledge gaining experiences reinforce their skills and curiosity. Soon they discover that it does not take too much effort to add to their knowledge base. Some references just take a check in the biographical section of a certain dictionary. Others need only a question to be asked of a judiciously selected person. They discover the search can be fun, too. A live play seen for the first time is exciting. A first time classical guitar concert or a first time rap concert is really enjoyable. Some topic is explored, and fellow students respect and applaud the resultant information shared with them. As students realize they have increased their knowledge in "cultural literacy" and cultural diversity, they have the incentive to become more curious and avid readers.

Appendix A: Building Background Knowledge Transparency

What can you tell about the blanks in the following sentences?

1. Very far away to her right, over several acres of silvery lilac rug, was an enormous desk. On the wall behind it hung a 6 foot-square painting of the flaying of M_____s, a contemporary copy of M_____o. Below the painting was the splendid figure of canon wheeler,... Julia allowed her eye to rest for a moment on the display of italian pornography behind canon wheeler's chair. (Greenwood 4)*

2. 'O_____s of course, lost his head,' said the superintendent ruminatively,... 'O_____s rejected women so they tore him to pieces and threw his head into the river Hebrus. It wasn't that he didn't like women, you understand, he simply stayed faithful to one who was dead. He became a cult figure in which notions of salvation by innocent suffering have a place. An interesting pagan anticipation of later christian teaching. ....' (Greenwood, 1991)*

*Greenwood, D. M. *Clerical Errors*. New York: St. Martin's, 1991.

1. Marsyas, Masaccio 2. Orpheus

Excerpts of this type can also be used for follow-up assignments. Some of the inferences that can be drawn from them, such as Masaccio was a pornographer, are not accurate. Further research by students helps them see the merit of checking one's sources and being open to changing one's mind on the basis of additional information.

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Writing Assignments: The Right Tool for Improving Math Skills?

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During the last decade numerous authors have written myriad articles and books concerning writing assignments in mathematics classrooms. Emig (1978) believed that writing in math classes made students analyze, compare facts and synthesize. DeMarois (1988) saw writing in the mathematics classes as a way to stop passivity, to help students use what they had learned, and to decrease anxiety and intimidation. Havens' (1989) students were upset initially with having writing assignments but later perceived the assignments as "positive, both scholastically and personally" (p. 554).

Socha (1989) recommended having the students keep a log with example problems and discussion on how the problems were solved. Miller (1991, 1992) suggested using logs as well as having timed, in-class impromptu writing prompted by the teacher. Nahrgang and Petersen (1986) offered using journal writing sessions as substitutions for quizzes. LeGere (1991) advocated collaborative writing in class, and DeMarois (1988) put forth the idea of writing abstracts which included a description of material covered the previous week. Johnson (1983) supported having students rewrite problems they did not understand. McIntosh (1991) proposed using creative writing in addition to writing logs, and Keith (1988) suggested using a wide variety of writing topics.

The researchers found only one article which examined test results and attitudes in connection with writing assignments. Nahrgang and Petersen's (1986) study considered students' test scores, attitudes, and writing as well as student and teacher evaluations. They concluded that "data have not established any strong relationships among the various attributes" (p. 465).

Developmental studies instructors from two Tennessee universities decided to ascertain if using writing assignments made any differences in test scores or attitude ratings for students in their basic mathematics, beginning algebra and intermediate algebra classes. During the fall semester of 1992, the researchers gathered pre-test and post-test scores from two different instruments. All the control and experimental classes were given Suinn's (1972) Mathematics Anxiety Rating Scale (MARS) and the Multiple Assessment Programs and Services (MAPS) Descriptive Tests of Mathematics Skills from the College Board.

The classes for each of the three mathematics instructors were divided into two groups: those with writing assignments and those without writing assignments. A total of 13 sections (220 students) taught by three different instructors were used in this study.

The researchers used two types of writing assignments in all the classes that received the writing treatments. First, each class was given the same four general tasks. These four assignments counted 10 points unit tests. The topics for the four tests were Personal Math History, Math Anxiety/Study Skills, a Math Article, and Famous Mathematicians.

A second type of writing assignment was developed for each particular course. On the review day, for each test, a 5-point writing project was required. These course-specific efforts were part of the homework points. At the end of the semester, the MAPS and the MARS were administered to all the students.

Based on the statistical analyses conducted on the MAPS data, all three courses showed no differences among the groups initially. Each group in each course showed highly significant differences between pre-test and post-test scores (significance of $F = .000$ in all three courses for both groups.) However, no significant differences (arithmetic significance of $F = .864$; beginning algebra significance of $F = .174$; and intermediate algebra significance of $F = .290$) in the pre/post data occurred between the group receiving written assignments and the group not receiving written assignments for any of the three courses.

Likewise, based on the statistical analyses conducted on the MARS data, all three courses showed no differences among the groups initially. Each group in each course showed highly significant differences between pre and posttest data (significance of $F = .000$ in all three courses for both groups.) However, no statistical differences (arithmetic significance of $F = .517$; beginning algebra significance of $F = .905$; intermediate algebra significance of $F = .872$) in the pre/post data occurred between the group receiving written assignments and the group not receiving written assignments for any of the three courses.

Students evaluated the writing assignments in their mathematics classes. Of those students who turned in evaluations of the writing assignments, 88% thought the assignments were beneficial and should be a part of the mathematics class. A little over 76% of the students thought the written assignments made a difference in their grades.

Researchers found that using writing assignments did not make any statistical differences in pre-test/post-test scores either on the MAPS or MARS. The majority of the polled students, however, perceived the writing assignments as being helpful in improving their grades (76%) and should be a part of the developmental studies mathematics courses (88%).

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The Writing Center and the Composition Classroom: Connecting Readers, Writers, and Text Motivating and Improving Basic Writers Through Reader-Response Activities

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Traditionally, instructors in the writing center have valued reader response as an incentive to and guide for revision, while classroom instructors have viewed it mainly as an evaluative device used by either teacher or peer. Over the past twenty years, however, movements in literary theory, particularly post-structuralist perspectives such as deconstruction, have gradually shifted the focus from the reader's role as either evaluator or provider of feedback to his and the author's joint responsibility for the creation of meaning in the text. As writing teachers look beyond process to the transactional model which such theories suggest, they have begun to redefine and remodel the reader response component of writing programs. My purpose here is to 1) briefly examine the underlying theoretical basis for the current emphasis on reader response as an essential connecting point in the writing transaction, and 2) offer practical examples of methods to achieve more effective reader response, frequently by combining the resources of the classroom and the writing center.

One need not make an exhaustive study of Jacques Derrida's deconstructionist philosophy to identify the major concepts which have infiltrated current composition theory. Put in simple terms, the deconstructionist views language, not as an empty vehicle carrying thought intact from author to reader, but as an ever-shifting flow of indeterminate symbols from which both author and reader construct or reconstruct meaning according to their own experiences. Just as the process model freed the text from rigid constraints and expectations, so the transactional model empowers the reader and frees the author from the perhaps impossible task of inscribing immutable meaning on the changing surface of language.

In the abstract, the prospect of authors and readers adrift on a sea of ambivalent meaning may seem alarming; however, in practice, the shared responsibility of author and reader turn what in former times may have been regarded as authorial lapses into opportunities for amplified communication. For example, one of my students, using her firsthand experience as a mother of two preschoolers, wrote what I thought was a witty, slightly tongue-in-cheek paper called "How to Tuck a Child into Bed." However, when the student read her paper aloud to the class, the responses to this seemingly straightforward text were amazingly varied. A male student who had been gamely trying to relate to his new girlfriend's toddler felt that the paper exposed the falsity of the childhood mystique and the grim reality of parenting. Most of the students with children of their own were heartened to hear that the author had shared their trying experiences, but one felt the paper revealed the author's ineffectiveness as a parent and advised her to take a stronger stand at bedtime. Some younger students seemed to be quite seriously filing away the author's so-called "tips" for future reference. Hardly any of the students expressed amusement or perceived what I felt was the paper's obviously satirical slant.

Did these multiple responses indicate that the author somehow failed in the execution of her original intention? Did she neglect to identify her audience, to tailor her word choice to her targeted readers, to adopt a tone and style suitable to her thesis, or to cue the readers to the paper's humorous purpose, if indeed humor was the purpose? Or, even more disturbing, were all the listeners too obtuse to correctly decipher her message?

In the context of a transactional classroom, the answer to all these questions is no. Granted that some authors shape meaning more successfully than others, just as some readers do, I could not fault my student writer or her audience for their failure to construct identical or, at times, even similar messages. The fact is that our class's open reading sessions were expressly designed to explore the limitless capacity of language to generate meaning and to elicit diverse responses. The author herself was delighted to find that her text, like all good writing, contained its own potential, which reached far beyond its author's intention; in fact, she had learned more about her own text by listening to the responses of others.

Once the emphasis shifts from evaluation to communication, many opportunities for the practical application of the transactional model become apparent. The writing center, with its resident group of sophisticated and knowledgeable respondents, becomes a natural ally in widening the circle of response and increasing the number of junctures where writers and readers can connect. One idea which works well is keeping a class disk in the center, where all members of the class have ready access to it throughout the day. Once a week or so, a different student is required to compose a message to his or her classmates concerning an issue raised in class and leave it on the disk. His classmates then read and respond to his message with their own entries. As the writings accumulate on the disk, students may wish to respond not only to the initial message but also to subsequent messages. This results in a substantial flow

of weekly writing, and a good many problems, as students submit their texts to the scrutiny of twenty-some peers, the classroom instructor, and the writing center instructors. These latter instructors can help the student sift through the responses and identify ways in which the text has actually failed to convey some essential idea in contrast to ways the text has simply accommodated someone else's interpretation. Sometimes students can bring hard copies of a week's worth of writing to class, where they discuss the myriad of ways in which language and readers interact. Usually, this results in still more writing, as students record their observations of the communication process or simply express frustration at the vagaries and quirks of language itself.

Another good activity is maintaining a class notebook of uncorrected copies of each student's papers. Like the class disk, the notebook works best if stored in the writing center where students can browse through their classmates' writing on their own time. At regular intervals, students can be asked to select a peer's paper which they especially like and present this paper to the class, along with an explanation of why the paper communicates well. While students instinctively recognize a good paper, they may request the help of writing center instructors to analyze the strong points of a classmate's paper and to discover the elements which make it work.

Traditionally used in creative writing classes, reading circles are another productive way of making writing "public" in composition class, providing the emphasis stays on response and not evaluation. In this activity, each student reads a paper aloud, and discussion of its content and implications follows. For a change of pace, students can select and read their classmates' papers, as described above. Whether the students later use the reactions and comments of their peers as a guide to revising their papers is up to the instructor, but such follow-up revision should not be considered necessary to "justify" the activity.

In fact, once we escape the tyranny of the evaluative perspective, many ways of surprising students into fresh responses to text become apparent. The instructor can share his own writing and encourage the class to respond, thus widening his own role by becoming writer as well as reader. The tacit message of the instructor's shift is that faculty and students alike are immersed in and, to some degree, at the mercy of language. The role of context in constructing meaning from text can be dramatically demonstrated by collecting writing from the students during the first week of class and handing it back during the last week. Students will be amazed to discover that they now enjoy a genuine reader relationship to their own texts.

The writing center can support the transactional perspective by providing ways for writing and response to extend beyond the space and time limitations of the traditional fifty-minute class. When students are not pressured to formulate the "correct" response to a given text, they become enthusiastic participants in the communication process and, amazingly, do not mind spending the extra time needed to formulate and record their own genuine responses to their own or others' writing. Conversely, students who are not given the opportunity to generate or receive response will sense that some vital element in the writing process has been denied them.

Writing Portfolios for Teaching Self-Evaluation in Basic Writing

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A writing portfolio provides an excellent resource for teaching students self assessment because it collects samples of the student's writing over a period of time, so students can accumulate concrete evidence to help them determine their own patterns of achievement and error. This is particularly important for basic writers since many of them are concrete thinkers and need a body of evidence to convince them of their errors and achievements.

The writing portfolio also provides a diagnostic window on the students' affective learning in terms of how flexible and persistent pupils are in developing their own writing in response to suggested pre-writing strategies, teacher feedback on previous essays, goal setting and their own writing improvement over a sequence of assignments. Since the writing portfolio includes concrete evidence of a variety of writing assignments and all stages of the writing process, students come to understand what teachers already know: writing is a developmental process.

Before using writing portfolios, I saw students' writing as "snapshots" of their abilities. but when I collected all stages of the students' writing over a period of time, patterns became evident. I could easily see the progress some students were making and the hurdles that impeded the progress of others. But, my challenge was convincing students of the positive and negative patterns I could see in their development as writers. The writing portfolio convinced the skeptical students because it recorded their development, process techniques and final draft. Other students would not make progress as writers until they were convinced that they were capable of success, not because I told them they were, but because their own writing portfolios and self-assessment showed them that they had already demonstrated progress.

Laying the groundwork for self-assessment begins with the syllabus and lesson plan. Effective portfolios must contain a variety of writing samples that also require students to produce physical evidence of each stage of the writing process. Variety refers not only to the modes of writing and the subject matters, but to the length of the essay and complexity of logic required to complete the assignments, the length of time between assignment and due date, the level of collaboration and feedback, and the freedom the student had to focus and develop the writing's scope. Certainly the writing portfolio could include graded essays, ungraded journal entries, pre-writing exercises, revisions of graded and ungraded drafts, free-writing and brainstorming sheets, writing done for other classes, and peer review responses.

Next, the teacher sets the developmental bench mark on the first day of class when students are asked to write a first day essay. There should be a menu of broad and accessible topics since the student can then be given the challenge to select, narrow, and focus a writing topic that is suitable to his or her interests or ability. The topic the student selects and how he or she focuses it will provide additional clues about writing strengths and weaknesses.

As a separate assignment very early in the term, the teacher should ask students to write an assessment of their individual abilities as writers. This may take the form of an attitude survey, narrative journal entry about the writing experience, or a full length essay with specific topic prompts. The self-assessment should ask the students to think about what they consider to be their strengths and weaknesses as writers and their anxieties about the writing process. This early self-assessment reinforces the idea that thinking about writing is important and will be practiced in the class. This writing should not be graded by the teacher, but students should be told that they will be given the self—assessment back at mid-term so they can re-assess their own progress as writers.

If students are to learn to self-assess, they have to be taught the language and vehicles of assessment. The teacher should familiarize students with criteria for writing achievement. Setting these criteria depends on the particular goals of the writing program, the ability and needs of the students, the level of freedom the teacher exercises over classroom content! and instructional support services. Certainly the more individualized these goals are, the more responsive the student will be to achieving them. The writing portfolio should provide the diagnostic material for negotiating and setting realistic, individualized goals .

My writing program focuses on three areas; the first is Writing Context. This refers to the student understanding and following the writing assignment, having a clear and meaningful purpose in the writing strategy he or she selects, and exercising audience awareness. The second major category, Writing Form, covers essay organization /introductions and conclusions, transitions, essay development through appropriate and adequate use of details and examples, and logic. The last category, Language, assesses the sentence structure, grammar and mechanic, and word choice. There is a myriad of possibilities that may be added to these criteria such as creativity, documentation style, critical thinking, and collaboration.

The teacher's goal should be to establish, announce, model and use the criteria for evaluation. After several weeks in the class, students should be familiar with how

to assess writing models using the announced criteria by practicing on essays other than their own. With this accomplished, the teacher has laid the groundwork for the next stage in self-assessment.

Depending on how much time the teacher has with the students and the level of control he or she has over the assignments in the classroom, mid-term is an excellent time to review the first day essay and self-evaluation and start setting those individualized goals for students. In preparation for self-assessment, students should organize their writing portfolio documents in chronological order. This means that each assignment should have been numbered and dated as it was written. A teacher-created table of contents and color coding assignments are particularly helpful for students who have trouble with organization skills. Students who have lost or never completed assignments should be required to make those missing papers up and place them in the portfolio, thus teaching the importance of managing as well as producing documents.

Prior to individual conferences with the student, the teacher should hand back the first day essay - ungraded- and ask each student to revise and rewrite the essay and attach the new copy of the essay to the first day draft. Additionally, the student should write a separate self-evaluation discussing his or her progress based on the first day essay and the writing that has taken place in the interim. To prevent students from making vague generalizations such as "I've just gotten better," the teacher should require each student to pull examples from his or her own writing to demonstrate any claim that is made.

Depending on the success of the format used for self-assessment in the first week of class, the teacher will have to decide how open or closed-ended the self-assessment prompt is at mid-term. I favor asking students to write up their own self-assessment by reviewing the body of their writing and then have them compose a letter to me discussing the specific changes they have made in their writing and approach to writing. This loosely structured assignment gives students ownership and empowerment in the assessment process. It is important for students to revise the first day essay before completing the separate self assessment essay since the revision demonstrates that they can apply the lessons learned about writing. Reviewing their own writing portfolio to date will provide the student with the evidence of their own development.

Following the rewrite of the first day essay and the writing of the midterm self-assessment, each student should conference with the writing instructor to review the entire portfolio to date. This is when the teacher and writing student together can review the writing samples to look for patterns of achievement and error and talk about the student's affective development as a writer.

The lesson of self-assessment is that some students are overwhelmed by what they see as an enormity of error when really they are repeating a few patterns of errors that account for many of the corrections on the page. The writing portfolio provides the concrete evidence to convince students of these patterns and show them that, for example, investing time in learning comma rules or paragraph development can remedy a large percentage of the "red marks" on their essays. Likewise the portfolio can convince them of the progress they have made as a writer. That way the sting of correction is tempered with the sweetness of achievement.

Now is the time for both teacher and student to use the information from the portfolio and the self-assessment to negotiate long and short term writing goals for the student. These goals should reflect the concerns and interests of the student as stated in the self assessment thus building on the truths the student recognizes about his or her own writing. In essence, by letting students self-assess, the teacher also allows the student to "buy into" and set the agenda for improvement. Because the student is a participant in the assessment, he or she is more likely to become an active learner. The portfolio provides the evidence for diagnosis and treatment and the proof that the cure can work.

At the end of the term, students should be asked to once again repeat the revision of the first day essay and mid-term rewrite along with completing another self-assessment based on the samples in the writing portfolio. The teacher should still not be involved in directly grading the first day essay or self-assessment since both should have total student ownership. The purpose is to demonstrate to the student writer that composition is something he or she can take ownership of and more importantly, improvement of writing skills is something he or she must take responsibility for and ownership of if he or she is to continue improving as a writer beyond the scope of the class.

My students have written some enlightening end of term assessments such as," I was afraid I would not be able to pass this class . . . I had a head full of exciting stories and examples, but the problem was that I had them all clogged up. I knew exactly what I wanted to write, but when I put it on paper, I wouldn't know where to put what. I had so many interesting ideas to put in my paper that I would be having run-on sentences without even knowing it . . . I'm still having problems with run-on sentences, but I'm taking care of that."

Another student wrote in her self-assessment letter to me," I have learned how to brainstorm by sorting out my thoughts on a topic. This helps me get ideas and write them down before I forget them. I've also learned how to make an outline and organize my writing for better essays because I know what the reader wants to read . . . I know the areas I need to work on and I pay really close attention to that."

These end of term evaluations were prompted by the writing portfolios that gave students concrete evidence of their progress as writers. Because they could see the progress, they could believe the progress and that gave many of them the confidence to continue their growth as writers.

No Handbooks: A Student-Based Approach to Grammar Instruction

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Summary

Grammar and style handbooks tend to bewilder Basic Writers, who are often overwhelmed by jargon and frustrated by "cooked" examples and rote exercises. Handbooks seem, indeed, to be written to students who already have a general understanding of grammatical concepts and terminology rather than to the students in a Basic Writing classroom.

The presentation began with example of actual student misconceptions about grammatical terminology and procedures. Referring to the first sheet of a hand-out packet, audience members read several such examples. For instance, students have mistaken the term "fused sentence" with "confusing sentence," resulting in their worries about "confused sentences" in their essays. Another student was terribly concerned about his "comma splashes" while another asked if she could "revive" her paper to improve it and her grade. Clearly these students (and many others) easily become mired in strange terminology that makes little, if any, sense to them.

The traditional infatuation with jargon shows in the number of instructors who (often coerced by administrators) impose "term tests" upon students. They do so despite the fact that what we call terminology is, after all, our own professional jargon. Perhaps their reasoning stems from the long since discredited belief that students need to understand terms like "predicate adjective" in order to use such structures fluently in their writing.

Unlike the jargon offered in upper-division studies of English grammar, simple descriptive terminology that makes sense to Basic Writers may actually transfer into their writing. Using hand-outs and overheads, the presenters offered examples of some of these terms, such as "yellow light" for subordinating conjunction and "lawyer word" for conjunctive adverb. A yellow light denotes caution; thus, instructors may advise students to proceed with caution when using yellow lights. In addition, students learn not to put commas before yellow lights because when the street light turns yellow, most drivers, rather than pausing (i.e. using a comma), usually speed up before the light turns red! Lawyer words, on the other hand, simply sound like words Perry Mason (or students' own favorite TV lawyer) uses in court — "thus," "hence," "furthermore," "moreover," "in addition to," "consequently," and so on. For coordinating conjunctions, the presenters suggested the popular mnemonic FANBOYS. Each letter of FANBOYS triggers students to remember one of the seven coordinating conjunctions.

In discussing punctuation, the presenters suggested that students, when they first enter Basic Writing classes, tend to employ commas in one of two distinct ways. Some opt for the "Yahtzee method," metaphorically shaking up their commas and scattering them across the page like random dice. Other, perhaps grounded in rhyme "When in doubt, leave it out," simply declare themselves, "I have doubts about all commas; therefore, I'll use none." Since, of course, neither of these methods works particularly well, the presenters offered a few guidelines that writers can begin to use at once without having to gain access to the complicated jargon of English professors. For example, the presenters explained that when a yellow light begins a sentence, students will probably not be able to reach the end of the sentence without the light turning red and should, therefore, expect to need a pause (and a comma) somewhere in the sentence.

Next the presenters shared exercises that rely on students' own language in conjunction with descriptive terminology. For one worksheet students begin with two kernel sentences, "John is my favorite little brother" and "He likes to sleep with me at times." They combine these sentences three different ways, using one FANBOYS, one yellow light, and one lawyer word. On another worksheet, students create their own kernels, the instructor selects certain groups of kernels to make up an exercise, and then all of the students practice combining the same kernels. In this way, students see various ways of coordinating, subordinating, and otherwise connecting ideas. What is more, they also approach rules governing the semicolon and commas inductively, in a way that has immediate meaning to them.

In the last part of the presentation, the audience became true participants as they created their own sentences, using everyday language. After combining kernels and "growing" sentences with generative grammar, several audience members contributed examples of plain, descriptive terminology they had developed in their own classes. One member shared that she characterizes conjunctive adverbs as "switch-hitters" for her students (because the conjunctive adverb can move within its clause) while another noted that he calls the same words "transfers." The presenters and the audience members concluded on a note of concurrence: that students best learn to write from their own language, through induction, and when they encounter grammatical concepts in terms that they can visualize or that access their prior language.

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Teaching Developmental Students: Creative Instructional Methods

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Developmental instructors are expanding teaching methods to increase motivation and academic success by implementing creative instructional strategies for students enrolled in developmental courses. Works such as Wlodkowski's "Time Continuum Model of Motivation" (1985) serve as the theoretical framework whereby instructors must take the responsibility of motivating students throughout the learning process. Stasis theory, student facilitators, games and simulations, and collaborative testing are unique instructional methods and strategies to increase motivation for developmental students.

Stasis Theory

Stasis theory is an ancient theory of rhetoric developed by Greek and Roman orators used to isolate the critical issue of an argument, "the stasis or basis." According to Fahnestock and Secor (1990, 1985), the "stasis" was the philosophical foundation of the argument and answered one of the basic four questions: 1) What is it? 2) How did it get that way? 3) Is it good or bad? 4) What should we do or not do about it?

Employing stasis theory in developmental education can be used to enhance the critical thinking process in students when the theory is used as a problem solving model. The four basic questions form a natural outline for solving word problems. In addition, the four questions also serve as a model for developmental writing. It is a system for organizing ideas. The theory proposes that every essay is a kind of argument and that there are only three basic types of arguments: arguments of fact, arguments of value, and arguments of policy. Arguments of fact answer the questions "Does it really exist?" or "What is it?" or "How did it get that way?" Arguments of value answer the question "Is it good or bad?" The question "what should we do about it" is answered by arguments of policy (Fahnestock and Secor, 1983).

Stasis theory offers a simple taxonomy of types of essays that is easily understood by developmental students. The progression from writing arguments of fact to arguments of value and policy helps students develop logical strategies for supporting a thesis in an essay. This theory also allows instructors to give students a foundation in composition and rhetoric that will be compatible with future instruction in English as well as other disciplines.

Student Facilitators

Another creative instructional technique deeply rooted in the educational culture is the formal use of a student to teach other students. In this technique, the teacher plans, delegates, and directs the learning situation (Wagner, 1982). The use of undergraduate students in the role of a facilitator is one such method. Here, the facilitator, under the direction of a instructor, teaches a course with the instructor. Traditionally, facilitators have been used to offset the effects of large classes. But in developmental classrooms a plethora of tasks can be accomplished by the use of facilitators.

Facilitators can ask questions, thus turning the class into a question and answer mode. They can give alternative explanations of material and give additional attention and feedback before, during, and after class. Facilitators can help supervise small group work and provide appropriate role models of active student learning. Finally, facilitators can give encouragement and reinforcement to students to students who traditionally lack such experiences.

Facilitators teach, model, and demonstrate behaviors that are appropriate for college success. Since most facilitators develop communication and leadership skills as a result of this experience, they benefit from their work as much as the student who receives guidance and assistance.

Games and Simulations

Simulations and games constitute a creative approach to learning. Developmental students learn by active participation, experience, and practice. Many attempts have been made to distinguish between the terms "simulations" and "games." Some authors see the two words as interchangeable while some think that a simulation is a type of game or that a game is a type of simulation. For the purpose of teaching developing students, a useful distinction is that a game has winners and losers while a simulation does not. Games tend to be more competitive. Simulations tend to be more like case studies with the students participating within an artificial environment.

In an extensive review of literature on students in elementary, junior and senior high school, Butler (1988) found studies indicating that simulations help develop decision making skills, promote the socialization process, including the development of cross-racial friendships and group cohesiveness, produce an increase tendency for student to attend school regularly and that simulations increase students feeling of self-confidence. Clearly, all of these goals would be appropriate for developmental students beginning their postsecondary education.

While many effective simulations can be created by the instructor, Horn and Cleaves (1980) edit a complete guide to simulations and games for educational purposes, many of which are appropriate for developmental students.

Collaborative Testing

Another effective instructional strategy is to allow students to take on or more of their tests or quizzes with a partner. The teacher should encourage each set of partners to study with each other prior to taking the exam or quiz. Students should be allowed to select their own partners; however, students should never be forced into taking a test with a partner. By using this method, students will learn first hand how others approach difficult test questions as well as the benefits of collaborative learning.

Conclusions

Developmental students need adequate stimulation and positive emotional responses to learning. The instructional methods cited are attempts to strengthen and reinforce primary methods of instruction and should be used only as a supplement to more traditional practices. Instructors using creative instructional methods will find their own classroom motivation enhanced along with their students.

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